CONTENTS OF VOLUME 38

Coherent Catastrophism 1
D J. ASHER,[1] S. V. M. CLUBE,[2] W. M. NAPIER[3] and D. I. STEEL[3,4], [1]*Anglo-Australian Observatory, P.O. Box 296, Epping, N.S.W. 2121, Australia,*[2]*Department of Physics, University of Oxford, U.K.,* [3]*Anglo-Australian Observatory, Private Bag, Coonabarabran, N.S.W. 2357, Australia,* [4]*Department of Physics and Mathematical Physics, University of Adelaide, Australia*

Relativistic Jets and the Nature of BL Lacertae Objects 29
R. I. KOLLGAARD, *Department of Astronomy and Astrophysics, The Pennsylvania State University, University Park, PA 16802, U.S.A.*

OJ 287: The Rosetta Stone of Blazars 77
L. O. TAKALO, *Tuorla Observatory, Tuorla, 21500, Piikkiö, Finland*

The Sun: A Synoptic View 111
J.-C. PECKER, *Collège de France, Annexe 3, Rue d'Ulm, 75231, Paris Cedex 5, France*

Star Complexes and Evolutionary Processes in Spiral Galaxies 165
Y. N. EFREMOV and A. D. CHERNIN, *Sternberg Astronomical Institute, Moscow University, Moscow, 119899, Russia*

The Astronomy of Hipparchus and his Time: A Study Based on Pre-Ptolemaic Sources 207
L. RUSSO, *Dipartimento di matematica, Università di Roma "Tor Vergata", Italy*

Introduction 249
M. C. STORRIE-LOMBARDI and O. LAHAV, *Institute of Astronomy, Madingley Road, Cambridge, CB3 0HA, U.K.*

Artificial Neural Networks as Non-linear Extensions of Statistical Methods in Astronomy 251
O. LAHAV, *Institute of Astronomy, Madingley Road, Cambridge CB3 0HA, U.K.*

Statistical Methods in Astronomy based on Artificial Neural Network Techniques 257
M. SERRA-RICART,* L. GARRIDO,† and V. GAITAN,‡ **Instituto de Astrofisica de Canarias, E-38200, La Laguna, Tenerife, Spain,* †*Departament d'Estructura i Constituens de la Materia/IFAE, Universitat de Barcelona, Diagonal 647, E-08028, Barcelona, Spain,* ‡*Institut de Fisica d'Altes Energies, Universitat Autònoma de Barcelona, E-08193 Bellaterra, Barcelona, Spain*

Approaches to Automated Morphological Classification of Galaxies 265
A. NAIM, *Institute of Astronomy, Madingley Road, Cambridge CB3 0HA, U.K.*

Hubble Classification of Galaxies using Neural Networks 273
A. ADAMS and A. WOOLLEY, *Artificial Neural Network Research Group, Department of Computer Science, University of Tasmania, GPO Box 252C, Hobart, Tasmania 7001, Australia*

Star–Galaxy Separation using Neural Networks 281
S. C. ODEWAHN and M. L. NIELSEN, *Department of Astronomy, 116 Church St. S.E., Minneapolis, MN 55455, U.S.A.*

Spectral Classification of Galaxies 287
L. SODRÉ JR and H. CUEVAS, *Departamento de Astronomia, Instituto Astronômico e Geofisico da Universidade de São Paulo, Av. Miguel Stefano 4200, 04301-904 São Paulo, Brazil*

Ultraviolet Stellar Spectral Classification using a Multilevel Tree Neural Network 293
R. K. GULATI,* R. GUPTA,* P. GOTHOSKAR† and S. KHOBRAGADE†, **IUCAA, Post Box 4, Ganeshkhind, Pune 411007, India, †NCRA, TIFR Centre, P.O. Box 3, Pune 411007, India*

The Use of a Hybrid Neural System for the Classification of Stars 299
M. KLUSCH, *Institut für Informatik und Praktische Mathematik, Christian-Albrechts-Universität Kiel, 24118 Kiel, Germany*

Using Neural Networks for the Detection, Extraction and Pre-Classification of Spectra in Objective Prism Images 309
R. SMAREGLIA,* F. PASIAN,* M. KONTIZAS,† E. KONTIZAS† and A. DAPERGOLAS†, **Osservatorio Astronomica, Via G. B. Tiepolo 11, -34131 Trieste, Italy, †Athens National Observatory, Astronomical Institute, PO Box 20048, GR-11810 Athens, Greece*

How Tracer Objects can Improve Competitive Learning Algorithms in Astronomy 317
M. HERNANDEZ-PAJARES,* J. FLORIS* and F. MURTAGH†, **Department Matemàtica Aplicada i Telemàtica, Univ. Politècnica de Catalunya, Apartat 30002, E-08080-Barcelona, Spain, †Space Telescope—European Coordinating Facility, European Southern Observatory, Karl-Schwarzschild-Str. 2, D-85748 Garching, Germany*

Spectral Classification with Principal Component Analysis and Artificial Neural Networks 331
M. C. STORRIE-LOMBARDI*, M. J. IRWIN,† T. VON HIPPEL* and L. J. STORRIE-LOMBARDI*, **Institute of Astronomy, Cambridge University, Cambridge, U.K., †Royal Greenwich Observatory, Cambridge, U.K.*

Generalisation in Neural Network Time Series Analysis 341
K. MACPHERSON, *Department of Physics and Astronomy, University of Glasgow, Glasgow G12 8QQ, U.K.*

Echoed Time Series Predictions, Neural Networks and Genetic Algorithms 351
A. CONWAY, *Department of Physics and Astronomy, University of Glasgow, Glasgow G12 8QQ, Scotland*

Dynamical Recurrent Neural Networks and Pattern Recognition Methods for Time Series Prediction: Application to Seeing and Temperature Forecasting in the Context of ESO's VLT Astronomical Weather Station 357

A. AUSSEM,* F. MURTAGH† and M. SARAZIN‡, **Very Large Telescope Division, European Southern Observatory, Karl-Schwarzschild-Str. 2, D-85748 Garching bei München, Germany, and Université René Descartes, UFR de Mathématiques et Informatique, 45, rue des Saints-Pères, 75006 Paris, France, †Space Telescope, European Coordinating Facility, European Southern Observatory, Karl-Schwarzschild-Str. 2, D-85748 Garching bei München, Germany (Affiliated to Astrophysics Division, Space Science Department, European Space Agency), ‡Very Large Telescope Division, European Southern Observatory, Karl-Schwarzschild-Str. 2, D-85748 Garching bei München, Germany*

Investigating Stellar Variability by Normality Tests 377

A. BROOKS,* D. CLARKE† and P. A. MCGALE‡, **Department of Computer Science, Strathclyde University, Glasgow G1 1XW, U.K.,†Department of Physics and Astronomy, The University, Glasgow G12 8QQ, U.K.,‡Department of Physics and Astronomy, University of Leicester, Leicester LE1 7RH, U.K.*

The Star*s Family: A Comprehensive Set of Yellow-Page and On-Line Services 401

A. HECK, *Observatoire Astronomique, 11 rue de l'Université, F-67000 Strasbourg, France*

Facts and Ideas in Modern Cosmology 419

YU. V. BARYSHEV,[1,2] F. SYLOS LABINI,[3,4] M. MONTUORI[4,5] and L. PIETRONERO[4], [1]*Astronomical Institute of St Petersburg University, St Petersburg 198904, Russia,* [2]*Scientific-Educational Union "Earth and Universe", St Petersburg, Russia,* [3]*Dipartimento di Fisica, Università di Bologna, Italy,* [4]*Dipartimento di Fiscia, Università di Roma "La Sapienza" P. le A. Moro 2, I-00185 Roma, Italy,* [5]*Dipartimento di Fisica, Università di Cosenza, Italy*